

Blue Earth County Aquatic Invasive Species Prevention Plan and Guidelines

*Guidelines for using Aquatic Invasive Species Prevention Aid
Minnesota Statute 477A.19*

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I. Introduction

Invasive species are defined as a nonnative species that: (1) causes or may cause economic or environmental harm or harm to human health; or (2) threatens or may threaten natural resources or the use of natural resources in the state.

It is generally recognized that the most effective strategy against invasive species is to prevent their introduction and establishment. Preventive measures typically offer the most cost-effective means to minimize or eliminate environmental, societal, and economic impacts. Prevention relies on a diverse set of tools and methods, including inspections, outreach, regulations, and enforcement.

Management of water bodies in a way to decrease their susceptibility to invasion by invasive species (e.g., maximizing diversity and reducing disturbance of in-lake and near shore vegetation) may also constitute an element of prevention. There is a growing need to examine how we can increase our understanding of managing ecosystems with invasive species as part of the picture. Management should focus on maintaining resilient systems that can act to slow the establishment, spread, and dominance of invasive species. This could lead to a basic shift from focusing solely on control, by adding management of the site to limit invasion as a part of the whole management package.

Purpose the Plan

The primary purpose of this plan is to provide guidelines for using Aquatic Invasive Species Prevention Aid (MN Statute 477A.19) to prevent the introduction and reduce the spread of aquatic invasive species populations.

Participants in this plan will actively seek to prevent the introduction of new invasive species in Blue Earth County and throughout Minnesota.

Required Content of Plan

There are many elements for addressing various phases of aquatic invasive species. The focus of this plan is prevention.

Minnesota Statute 477A.19 requires counties to establish guidelines for the use of the aquatic invasive species prevention aid which “may include, but are not limited to, providing for site-level management, countywide awareness, and other procedures that the county finds necessary to achieve compliance.”

Each county must submit a copy of its guidelines for use of the proceeds to the DNR by December 31 of the year the payments are received. The DNR provided a template for establishing AIS prevention aid guidelines based on the Minnesota Invasive Species plan. As stated in the DNR’s AIS template, “County plans are not required by statute to be consistent with an action in the state plan.”

Plan Development and Review

The Environmental Services Department prepared this plan using the 2014 DNR Aquatic Invasive Species Prevention Aid Framework for Counties and the Minnesota State Management Plan for Invasive Species.

To help determine and prioritize actions for using AIS Prevention Aid, a survey was administered in August 2015 to help identify and prioritize actions for using the AIS Prevention Aid as well as assess the knowledge and behavior of survey respondents.

This plan and guidelines will be reviewed and updated as needed. It is expected that implementable strategies and actions will be dynamic and will change due to changes in authority, priorities, resources and knowledge. Additional strategies or actions can be added in the plan's implementation table as the need for those strategies or actions are determined by participating entities.

Reporting on Implementation

The DNR recommends tracking expenditures for audits. There are no reporting requirements for the Aquatic Invasive Species Prevention Aid.

The Department of Natural Resources is responsible for preparing annual reports on invasive species and progress to address them. The DNR report is submitted to the State Legislature's Environment Committees by January 15th each year. In addition, the DNR submits reports to the U.S. Fish and Wildlife Service regarding accomplishments using federal grants to implement state aquatic invasive species related actions.

Aquatic Invasive Species Authority

Blue Earth County

Prior to 2014 and establishment of Aquatic Invasive Species Prevention Aid (MN Statute 477A.19), counties had no aquatic invasive species management responsibilities. The County's new role is limited to preventing the spread of aquatic invasive species by establishing local guidelines for use of Aquatic Invasive Species Prevention Aid and using the funds in accordance with those guidelines.

Minnesota Department of Natural Resources

The Minnesota Department of Natural Resources (DNR) Invasive Species Program was established in 1991 and was the first program of its kind in the nation. DNR has responsibility to develop and coordinate a statewide program to prevent the spread of invasive species of wild animals and aquatic plants (Minnesota Statutes 84D).

The DNR Invasive Species Program addresses management and containment of many invasive species that are present in Minnesota such as Eurasian watermilfoil, curly-leaf pondweed, flowering rush, purple loosestrife, faucet snail, spiny waterflea, zebra mussel, and common carp. DNR Invasive Species Program staff provide technical assistance to entities interested in conducting management of aquatic invasive plants. The DNR also provides management grants to local entities for managing aquatic invasive plants such as Eurasian watermilfoil and curly-leaf pondweed. Beginning in 2016, the DNR reduced the total amount available for management grants.

A large part of the DNR prevention program is outreach to boaters, anglers, and others via radio, newspapers, billboards, and publications. Prevention efforts are often undertaken with other states, agencies, and partners with similar concerns. DNR provides grants to local entities for prevention efforts such as implementing the Stop Aquatic Hitchhikers campaign in their area.

DNR has regulatory and enforcement roles for aquatic invasive species as specified in Minnesota Statutes 84D (www.revisor.leg.state.mn.us/statutes/?id=84D). The agency has adopted Minnesota Rules 6216 that designate prohibited and regulated invasive species of wild animals and aquatic plants and establish

regulations related to infested waters. The agency designates infested waters through commissioner's orders that are published in the *State Register*.

II. Species, Pathways and Geographic Area Covered by the Plan

This plan is intended to cover aquatic animals and aquatic plants identified as aquatic invasive species by the State of Minnesota Department of Natural Resources (DNR). The list of aquatic invasive species and affected water bodies addressed by the guidelines will be updated regularly to be consistent with the DNR.

Geographic Area Covered by the Plan - Watercraft Launches

Aquatic invasive species aid provided under Minnesota Statute 477A.19 was based on the number of watercraft launches and parking spaces at launches in each county.

"Use of proceeds. A county that receives a distribution under this section must use the proceeds solely to prevent the introduction or limit the spread of aquatic invasive species at all access sites within the county."

The following table shows the number of public watercraft trailer launches and trailer parking spaces in Blue Earth County. A map showing trailer launches and number of parking spaces is attached to this plan.

Water Body Name	Number of Trailer Launches	Total Number of Trailer Parking Spaces	Percent of Total Trailer Parking Spaces
Madison Lake	3	75	26.0%
Lura Lake	4	53	18.4%
Loon Lake	1	23	8.0%
Duck Lake	1	20	6.9%
George Lake	1	16	5.6%
Watonwan River	3	14	4.9%
Ballantyne Lake	1	10	3.5%
Blue Earth River	1	10	3.5%
Crystal Lake	1	10	3.5%
Eagle Lake	1	10	3.5%
Mills Lake	1	10	3.5%
Minnesota River	1	10	3.5%
Rice Lake	1	8	2.8%
Wita Lake	1	7	2.4%
Ida Lake	1	6	2.1%
Indian Lake	1	6	2.1%
Total	23	288	100%

Source: MN DNR 2014

There are 23 watercraft trailer launches in the county. Responsibility for oversight of the 23 trailer launches lies mainly with the DNR and local units of government. Blue Earth County administers ten, the DNR nine, municipalities three, and one by the Lura Lake Sportsman Club. The following table summarizes the agency or organization responsible for watercraft launches in the county.

Watercraft Launch Responsibility		
Blue Earth County - 10		DNR - 9
Madison Lake – Bray Park* 2 on Lura Lake – Daly Park* Duck Lake – Duck Lake Park George Lake Eagle Lake 3 on Watonwan River Blue Earth River – Le Hillier		Madison Lake Lura Lake (NW) Loon Lake Rice Lake Mills Lake Wita Lake Ballantyne Indian Lake Ida Lake
Municipal - 3		Sportsman Club -1
Lake Crystal — Robinson Park Madison Lake - Point Ave/Park Rd Mankato – Land of Memories Park*		Lura Lake Sportsman Club
*Park with campground		
SOURCE: MnDNR and Blue Earth County		

While most users of these resources, parks and campgrounds come from Minnesota, Iowa visitors are common at county parks. The following table shows the general home of campers in Blue Earth County campgrounds.

Campers' Home	Number of Campers Each Year					
	2009	2010	2011	2012	2013	2014
Blue Earth County	2,632	2,350	2,426	2,407	2,541	2,205
Minnesota	4,052	4,123	4,421	4,619	4,574	4,528
Arizona	16	13	14	9	13	5
Colorado	21	23	6	4	5	5
Florida	16	0	2	13	2	2
Illinois	13	13	5	14	12	6
Iowa	221	230	175	102	117	292
South Dakota	79	72	22	43	58	72
Texas	5	18	11	39	22	35
Wisconsin	17	19	21	15	30	55
Other States	70	101	37	63	36	68

Source: Blue Earth County Public Works

Aquatic Invasive Species

The Minnesota DNR 2014 list of designated infested waters consists of 688 waters statewide which are infested by one or more AIS (excluding viral-origin VHS and some waters are duplicated if they are

infested with more than one AIS). Some AIS are omitted from the list, presumably because some, like common carp, curled pondweed and reed canary grass, are long-established and virtually ubiquitous in many parts of the state. Common carp, curled pondweed and reed canary grass are widespread and abundant in Blue Earth County and have substantial environmental and human impacts.

Of the 688 waters comprising the 2014 list, 510, or three-quarters, are infested either with Eurasian watermilfoil (298) or zebra mussel (212), suggesting that these two AIS are perhaps spreading more aggressively than some others.

In Blue Earth County and immediately adjacent counties, 12 waters are on list as of 2014: 3 in Blue Earth, 7 in Le Sueur and 2 in Waseca. Aside from 3 flowering rush sites in Le Sueur County, all are infested with Eurasian Water Milfoil. Adjacent counties immediately north and east of Blue Earth County (Le Sueur, Waseca) have infested waters, whereas the adjacent counties to the south and west (Faribault, Martin, Watonwan, Brown and Nicollet) currently do not.

As stated in the State Plan,

“While the approaches are often common among species, there are not sufficient resources, capacity, knowledge, or need to treat all invasive species/situations in a similar manner. For many species there are no tools to manage them once introduced and for others, better management tools are needed. There is a need to prioritize prevention, detection, rapid responses, containment or quarantine, and management actions.”

Manage existing populations of aquatic invasive species

Two aquatic invasive species, common carp and curled pondweed, are widespread and abundant in Blue Earth County and in some cases have been present for more than a century.

Common Carp

Common carp were systematically introduced to waters of the United States in the late 19th century by means of a large stocking program. This fish can have an enormous impact on the recreational value of surface waters under certain conditions by reducing water clarity, competing with fish species of higher recreational value and the abundance of phytoplankton. It typically achieves nuisance abundance in shallow lakes following winter kill. Carp do not tolerate low oxygen concentrations but they are powerful colonizers of vacant environments and the females are very fecund, often carrying several million eggs. Lakes like Lura, which have a history of winter kill, have supported enormous populations of carp from time to time.

Management of this species in Blue Earth County and elsewhere has consisted of isolating infested lakes with fish barriers to prevent re-entry; followed by eradication of carp using fish toxicants and re-stocking of a replacement fish community of higher recreational value. These “lake reclamation” initiatives often result in spectacular, if sometimes temporary, gains in water clarity, angler use and aquatic macrophytes.

Longevity of benefits varies, depending on the effectiveness of isolation and other factors. Lura Lake was reclaimed in this way in 1994; other Blue Earth County examples include Ida and Mills. Funding of lake reclamation projects has generally been provided by the DNR, often in cooperation with conservation clubs and communities.

Curled pondweed

Curled pondweed was inadvertently introduced to Minnesota waters as a by-product of the 19th century carp stocking program; its presence in the state may have been first documented in a St Paul hatchery pond. It seems to have spread across southern Minnesota lakes in the second half of the 20th century and it is now essentially ubiquitous in Blue Earth County. This plant differs from other local macrophytes (lake vegetation) in that it begins growing in the fall, forms dense stands by the following spring and then senesces by approximately the end of June. It is generally considered to be a huge nuisance by lakeshore homeowners, partly because of the large stands that interfere with boating and partly because of the masses of heavy, wet plant material that wash up on windward shores following senescence. These can require laborious removal during the peak season for recreational lake use. Lake associations have expressed the most concern about the nuisance aspect of curled pondweed; some area associations have extensive annual herbicide application programs aimed at reducing its abundance. These have been funded by the lake associations or have received DNR support. Herbicide application should be viewed as temporary relief rather than prevention, although some lake associations believe that they are achieving a longer term reduction in curled pondweed abundance by cutting off turion (winter bud) deposition.

Water Quality

For both carp and curled pondweed, abundance is to some degree a function of poor water quality. In the longer term, water-quality improvement will be the most effective means of reducing impacts. Fish Lake in neighboring Le Sueur County is a good local example of this concept: both carp and curled pondweed are present in Fish Lake but neither AIS seems to achieve nuisance abundance in the setting of clear water, stable habitat, diverse aquatic macrophytes and a diverse native fish community.

Pathways

Two primary pathways for introduction of AIS are human-facilitated (transported with watercraft and associated hardware) and active and passive movement of AIS via surface water connections.

There are many pathways of introduction and spread of aquatic invasive species. Most species introductions are the result of people's actions. Some introductions, such as common carp, were intentional and caused unexpected harm. But many other introductions are unintentional.

Invasive species are often unknowingly carried in or on animals, vehicles, ships, commercial goods, water.

Surface Water Connections

Blue Earth County has many miles of streams which drain surface waters to the Minnesota River. Connectivity has been increased substantially over the years by the construction of drainage ditches and most surface water features now have some sort of surface connection to downstream waters.

Surface water connections are potential pathways for both large animals capable of actively moving upstream (common carp, bighead carp, silver carp) and for a larger number of AIS that can be passively transported between connected waters as eggs, larvae, seeds or plant fragments. Potential drift of Eurasian Water Milfoil fragments from upstream infested waters (Ballantyne) to downstream non-infested waters (Washington) seems possible, for example.

An array of dams, gradient control structures, outlet structures and fish barriers exists in Blue Earth County and waters immediately downstream of Blue Earth County. Some are natural features (Minneopa Falls) but most have been installed for a variety of purposes that include lake level control (Madison Lake outlet), power generation (Rapidan Dam) or gradient control. Some of these structures are multipurpose and include features intended to prevent the upstream movement of fish (Lura Lake, Blue Earth County and Faribault County outlets). A few were installed solely for the purpose of preventing upstream fish movement (Shanaska Creek barrier at Kasota, installed in the 1950s to prevent carp from migrating upstream into Emily, Washington, George, Ballantyne and Duck Lakes).

Bighead carp are now present in the Minnesota segment of the Mississippi River, in the St Croix River and in waters in the southwestern part of the state that drain to the Missouri River. It appears possible for these fish to expand further upstream in the Mississippi and tributaries and if they do, movement into Blue Earth County waters could occur. Lakes like Madison, with direct connections to the river and no fish barrier preventing entry, could be particularly at risk. It has taken approximately four decades for bighead and silver carp to reach Minnesota waters from their initial stocking site. It took common carp approximately seven decades (1880s - 1950s) to expand north as far as central Manitoba, following water pathways.

Human-facilitated movement of AIS

Society has become increasingly mobile in the last half of the 20th century and first decade of the 21st century. On a local scale, automobiles, boats, boat trailers, roads and public water accesses have all improved considerably over the last 60 years.

Some AIS are clearly more likely than others to transport in the complex architecture of a recreational boat trailer and then to colonize a new surface water. In Blue Earth County and adjacent counties, Eurasian Water Milfoil seems particularly likely to spread by this method. This plant can grow from small fragments, making it particularly suitable for transport from lake to lake on boat trailers and fishing gear.

Level of Risk

Personal Equipment

Personal equipment such as waders, fishing gear, and decoys can be vectors for transport mussels, and other AIS, such as New Zealand mudsnails, faucet snails, spiny water fleas, and Eurasian water milfoil. Personal equipment should be cleaned and dried, especially if leaving an infested body of water. (Source: DNR Aquatic Invasive Species (AIS) Watercraft Inspection Handbook 2014)

Types of Watercraft

There is a wide range of risks associated with different types of watercraft and water-related equipment. It is important to understand those risks. Marina boats and other boats moored in the water are the highest risk, especially commercially hauled boats because they likely have adult mussels attached. Hand-launch craft like kayaks or canoes have very low biological risk.

Situations that pose higher risk include: boats leaving infested waters that were moored, watercraft coming in from another state, boats which show a lot of dirt or algae growth below a clear waterline, or boats which have water on board. (Source: DNR Aquatic Invasive Species (AIS) Watercraft Inspection Handbook 2014)

Risk of transporting mussels and other AIS	
Types of Water-Related Equipment	Risk Level
<ul style="list-style-type: none"> Moored boats, boat lifts, docks, weed rollers 	High Risk—possible adult mussels attached
<ul style="list-style-type: none"> Ski and wakeboard boats with ballast tanks Sailboats with ballast tanks Fishing boats with livewells 	Medium to High Risk—veligers or water fleas in water, plants, and plants with zebra mussels or other aquatic animals on trailers
<ul style="list-style-type: none"> Smaller open boats with outboard motors (no livewells, no ballast tanks) Personal watercraft (PWC, Jet Skis) 	Medium Risk—adults and veligers unlikely, plants with animal species attached may be on trailers
<ul style="list-style-type: none"> Hand-launched craft: canoes, kayaks, belly boats, inflatables 	Low Risk—Educate and inspect if workload permits; if dirty from being moored may be risky
<i>Source: DNR Aquatic Invasive Species (AIS) Watercraft Inspection Handbook 2014</i>	

III. Stakeholder Input

Minnesota Department of Natural Resources

The DNR's January 2011 Report to the Minnesota Legislature on Aquatic Invasive Species Prevention Measures contained stakeholder recommendations. The following is a summary list of eight areas of stakeholder group recommendations:

- Increase enforcement of AIS laws at the state and local levels;
- Increase penalties for violations of state invasive species laws;
- Improve the DNR's watercraft inspection process for AIS;
- Increase public awareness of AIS;
- Aid AIS actions at water accesses;
- Require lake service provider licensing and training;
- Focus on high-use infested waters & prioritize; and
- Increase funding for AIS efforts.

Blue Earth County Survey

Blue Earth County conducted an online survey in September 2015. Many of the results of Blue Earth County's survey were similar to the focus group results presented in the DNR's January 2011 Report to the Minnesota Legislature on Aquatic Invasive Species Prevention Measures.

There were 75 respondents to the local survey. Of those 67% were "very concerned" about aquatic invasive species, and 29% were "somewhat concerned." Among the AIS prevention strategies presented in the survey, respondents indicated "inspectors at boat landings" (84%) and "signs at boat landings" (45%) would be the most effective for preventing the spread of aquatic invasive species. Survey respondents considered web sites and advertising least effective for preventing the spread of aquatic invasive species.

The survey respondents who own or rent watercraft were asked a series of questions to determine their knowledge of Minnesota laws related to preventing the spread of aquatic invasive species. There were two areas respondents were most likely to answer incorrectly or that they were unsure: transporting boats with the drain plug removed and disposing of unused bait. Some respondents did not think it was

necessary to remove drain plugs or vegetation from boats or trailers if the lake they were leaving was not infested with aquatic invasive species.

Survey respondents were also invited to submit additional comments and suggestions to various questions. The following tables summarize additional comments in the local survey.

Survey respondents' suggestions for improving boat launches in Blue Earth County were:

Number of Respondents	Summary of Suggestions for Improving Boat Landings
6	boat washing equipment, such as boat washing stations, hot water, pressure washer or running water
2	better signs
2	remove vegetation from water near boat launches
1	space for pulling boat out of the way to remove vegetation, etc.
1	bait disposal receptacle
1	watercraft inspectors or volunteers
1	better lighting

Survey respondents' additional comments and suggestions were:

Number of Respondents	Summary of Additional Comments and Suggestions
6	watercraft inspectors, enforcement and fines
4	more water quality practices and wetlands are needed to reduce nutrients
3	more chemical treatment is needed
3	more education is needed (not specific)
2	signs and garbage receptacles at boat landings
2	AIS is inevitable
2	more funding is needed to counties and lake associations

A more detailed summary of the survey results, comments and suggestions is in the appendix.

IV. Implementation Strategies and Actions

Funding Guidelines

Blue Earth County will be using Aquatic Invasive Species Aid to implement local programs and programs with local and regional partners, including grants to local recipients. Recipients of Aquatic Invasive Species Aid will be required to prepare a detailed implementation plan for review by the Environmental Services Department. The proposal must be consistent with the guidelines in this plan.

Recipients of Aquatic Invasive Species Aid in Blue Earth County will actively work to prevent the introduction of aquatic invasive species in Blue Earth County and throughout Minnesota.

Implementation Strategies and Actions Table

General implementation strategies include the following:

- A. Assess the county's resources and risk of AIS introduction**
- B. Increase public awareness and participation in prevention**
- C. Increase county enforcement resources**
- D. Increase available resources and leverage partnerships**
- E. Manage existing populations of aquatic invasive species**
- F. Address specific pathways of introduction**
- G. Broaden knowledge of and participation in early detection and rapid response activities**

A table summarizing potential strategies and actions is attached. The table displays potential actions for consideration to prevent the spread of Aquatic Invasive Species Aid (AIS) in Blue Earth County. With limited resources, it is not possible to implement all of these potential actions. It is expected that implementable actions will be dynamic and will change due to changes in authority, priorities, resources and expertise. This will be a bridge between the strategic planning and operational planning and can be modified without changing the plan framework. Additional strategies or actions can be added in the implementation table as the need for those strategies or actions are determined by participating entities.

The County will develop an annual plan of work for use of the aquatic invasive species aid.